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Reply to: OCE-127

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J. Wayne Maxie, R.G.
Manager, Environmental Projects
Agrium US, Inc.
4582 S Ulster Street Suite 1700
Denver, CO 80237-2641

Re: Comments to March 27, 2015 Updated Site Assessment Report
Administrative Order on Consent for Nu-West Industries, Inc.
Idaho Facility, Docket No. RCRA-10-2009-0186

FILE COPY

Dear Mr. Maxie:

EPA has reviewed the Updated Site Assessment Report ("Report") dated March 27, 2015 for the Nu-West Industries, Conda Phosphate Operations facility, which we understand is intended to meet and fulfill the requirements of the Sampling and Analysis Report, as referenced in paragraphs 64 of the Administrative Order on Consent (AOC). The Report is disapproved. In accordance with paragraph 68 of the AOC, a list of comments are provided with this letter identifying deficiencies with the submission.

Paragraph 69 of the AOC requires that within thirty calendar days of receipt of EPA disapproval of a report, a revised report be submitted. Several of EPA's comments identify data assessment gaps and the need for additional work to fulfill work plan requirements, which will take longer than thirty days to address. Consequently, a revised report submittal is not required within thirty days of receipt of this letter, but needs to be submitted in accordance with a proposed schedule approved by EPA.

Thank you for your attention to this important matter.

Sincerely,

Peter Magolske
Air and RCRA Compliance Unit

cc: Brian Monson, Idaho Department of Environmental Quality
P. Scott Burton, Esq. Hunton and Williams LLP
Timothy J. Carlstedt, Esq. Hunton and Williams LLP

EPA Comments to March 27, 2015 Updated Site Assessment Report

Comment 1

The Introduction on page 3 of the report includes the following statement:

> This USAR is intended to be a comprehensive report, without need to cross-reference the 2014 USAR.

The Assessment should include either a historical view highlighting episodes of contamination attributed to the site (e.g., the contamination found at production well NW-9; the Simplot Conda Annual Reports describing contamination attributed to the Nu-West site impacting Conda water wells; major releases of process/gypsum stack water; etc.) or a reference as to where this information has been compiled.

Comment 2

Page 4 of the report includes the following statement:

> This report is being provided in the context of settlement discussions with U.S. Department of Justice subject to Rule 408 of the Federal Rules of Evidence.

The report is being provided to satisfy the requirements of an agreed order issued pursuant to Section 3013 of RCRA, the terms of which must be satisfied independent of any settlement discussions with the U.S. Department of Justice. The RCRA 3013 Order is a settled matter, as is the submission of reports on site investigations required by the Order. EPA does not agree with the statement and cannot approve it as part of the report. It needs to be removed from the report.

Comment 3

Section 2.7.2.4 of the report (Temporal Changes in Groundwater Elevation) describes pronounced seasonal variation in water levels for many wells. This finding indicates continued water level monitoring is necessary in order to better define temporal variations.

Comment 4

Section 8.6.1 of the report includes the following statement:

> Field pH and/or laboratory pH measurements for samples from several wells have been above the Idaho Secondary Constituent Standard range of 6.5 to 8.5 S.U. The elevated pH at four of these locations (A-19-240, A-32-110, A-49-185, and A-50-125) is believed to be attributable to stagnation in the water column in the well casing and the inability of low-flow purge and sample methods to effectively draw in fresh groundwater from the formation. An alternate sampling methodology for these four wells is being implemented to evaluate the effect on pH

measurements. For other locations, pH measurements above 8.5 S.U. appear to be isolated events related to pH meter calibration or insufficient purge volume prior to sampling.

Phosphoric and sulfuric acids are manufactured at this facility, and low pH groundwater and other contaminants have been found in monitoring wells located within the main processing plant. This will need to be addressed in the next steps following the RCRA 3013 investigation or during corrective action. High pH of greater than 8.5 S.U. is not associated with any product that is produced at this facility. Elevated pH in the range of 8.5 – 12 has been detected in several monitoring wells, which may be due to improper monitoring well installations. This issue needs to be resolved either by an acceptable sampling procedure or a re-installation of the monitoring well(s).

Monitoring well A-32-110 has shown increasing pH over two years of sampling, with most recent data reported in the 10 – 12 pH range. Monitoring well A-32-110 has purged dry and shown very slow recharge.

EPA requested that Nu-West conduct a camera inspection of the riser and screen for monitoring well A-32-110, which was completed in May 2015. Video of the well indicated that approximately 45% of the screen interval was covered in an encrustation of some material. The elevated pH data from groundwater samples obtained from this monitoring well suggests that grout is the source the elevated pH and encrustation.

Monitoring well A-32-110 was installed in 2012. The Addendum 2 to the Work Plan for Additional Requirements specified the use of a submersible pump and surge block during well development to purge groundwater until the development water was relatively free of suspended sediment and turbidity stabilized to 20 nephelometric turbidity units (NTUs). A surge block was not used during well development and turbidity of less than 20 NTUs was not attained.

Use of a surge block to remove the encrustation on the screen intervals is within the scope of work under the operative work plan for this monitoring well and must be used to remove the encrustation. The extent of grout interference, or other material blocking the screen interval is unknown. If the screen interval on the monitoring well cannot be cleared so that it can receive groundwater representative of the formation, a replacement monitoring well will need to be installed.

Groundwater sampling data in the first quarter 2015 shows that Monitoring Wells A-19-240 and A-49-185 continue to exhibit elevated pH in excess of 8.5. The groundwater yield and more neutral pH values reported during borehole advancement at these locations is inconsistent with the more recent sampling data. This suggests that grout interference is likely impacting sampling results at the A-19-240 and A-49-185 monitoring wells.

A camera inspection of these monitoring wells is necessary to evaluate the condition of the well screens in order to determine if the installation and monitoring was done in a manner to satisfy work plan requirements.

EPA does not agree with the statement above from section 8.6.1. Replace it with the following:

> Field pH and/or laboratory pH measurements for samples from several monitoring wells have been above the Idaho Secondary Constituent Standard range of 6.5 to 8.5 S.U., including at locations A-19-240, A-32-110, A-49-185, and A-50-125. Monitoring well A-32-110 was

inspected by camera subsequent to the submittal of the draft March 27, 2015 Updated Site Assessment Report, and was found to contain an encrustation over approximately 45% of the screen interval. Monitoring wells A-19-240, A-49-185, and A-50-125 will be inspected by camera to evaluate the condition of the wells' interior. In the interim, an alternate sampling methodology has been implemented at these wells in order to evaluate the effect on pH measurements. For other locations, pH measurements above 8.5 S.U. appear to be isolated events related to pH meter calibration or insufficient purge volume prior to sampling.

Comment 5

Section 8.6.2.4 of the report includes the following statement:

> The highest cadmium concentrations are historically associated with samples collected from soil-bedrock interface monitoring wells in the vicinity of the Phosphoric Acid Plant, where concentrations above the EPA MCL of 0.005 mg/l have been detected in samples from all 17 wells. In November 2014, cadmium concentrations above 1 mg/l were detected in samples from A-38-019, A-39-023, A-42-020, A-43-017, and A-44-024.

The February 2013 Site Assessment Report included Figures 8-3 and 8-4, which presented distribution of select metals and pH data at the site. Provide figures depicting the cadmium distribution on the site.

Comment 6

Section 8.6.3.3 of the report indicates that SO4 concentrations above 250 mg/l provide an indicator of ground water affected by Facility operations.

A figure depicting the major ion chemical signatures of the wells in areas of the site (Mg + SO4, Na + SO4, CO3, etc.), along with Figure 8-5 (Maximum Sulfate Concentration in Groundwater) would provide a clearer picture of the sulfate issue at the facility. Provide a figure depicting the major ion chemical signatures of the wells in areas of the site (Mg + SO4, Na + SO4, CO3, etc.).

Comment 7

Section 8.6.5.4 of the report states the following:

> The major ion geochemistry, when compared to affected groundwater at the Facility, indicates that the nitrate is likely not attributable to the CPO Facility. The samples are characterized by a shift away from Ca-Mg-HCO3 type groundwater toward sodium (Na) and chloride (Cl). This trend is distinguished from the Na-SO4 trend in the relative proportions of the major anions bicarbonate, sulfate, and chloride. Groundwater in the Na-SO4 trend is characterized by a shift away from bicarbonate toward sulfate with no relative enrichment of chloride, while the domestic well samples are characterized by a shift away from bicarbonate toward sulfate ***and*** chloride. The domestic well sample trend is most apparent when plotted in the anion ternary of the Piper diagram (Appendix 8H). Similarly, the domestic well sample trend is distinguished from the Mg-SO4 trend in the relative proportions of the anions bicarbonate, sulfate, and

chloride as plotted in the Piper diagram (Appendix 8H). Groundwater in the Mg-SO4 trend is characterized by a shift away from bicarbonate toward sulfate with no relative enrichment of chloride, while the domestic well samples are characterized by a shift away from bicarbonate toward sulfate *and* chloride.

EPA does not agree with the conclusions drawn regarding major ion geochemistry.

The Stiff diagrams for the domestic wells appear very similar in size and shape as those for monitoring wells A-70-135, A-71-220, A-72-135, A-73-190, and A-54-310.

Fourth quarter 2014 sampling of Monitoring Well A-71-147 identified nitrate above the maximum contaminant level (MCL) and sampling of Monitoring Well A-73-190 identified fluoride and nitrate above the MCL, as well as elevated levels of sulfate. First quarter 2015 sampling of Monitoring Wells A-71-147, A-71-220, and A-73-190 identified nitrate above the MCL and elevated levels of sulfate. Sampling at domestic wells #1 and #10 indicated nitrate in excess of the MCL. Sampling of several of the domestic wells and the ARR MAZ well indicated fluoride impacts.

Groundwater elevation data from Figures 2-14, 2-15, and 2-16 indicate groundwater flow from nitrate source areas in the Main Processing Plant in a southwest direction towards the domestic wells. In order for the nitrate plume to not continue with the flow of groundwater in a southwest direction and into the area populated by the domestic wells, it would have to flow in a different direction, not identified in Figures 2-14, 2-15, and 2-16.

Remove the entire paragraph referenced above from section 8.6.5.4 from the report.

Comment 8

Section 9.1 of the report does not discuss the possibility of direct recharge of the Soil-Bedrock Interface Aquifer from the Phosphoric Acid Plant and nearby facilities when describing the soil/bedrock interface water bearing zone. The plant and plant releases should be discussed as a contributing source of water in soil/bedrock interface water bearing zone. Revise section 9.1 accordingly.

Comment 9

Section 10 of the report presents the scope and findings of an evaluation of surface runoff features around the Dry Products Storage Building. The report does not discuss any relationship between surface water runoff and infiltration of contaminants into groundwater.

Releases of chemical products surrounding the periphery of the Dry Products Storage Building have been documented by EPA. Soil borings from locations SB-63, SB-65, SB-66, SB-67, SB-71 and others indicate elevated levels of both ammonia and nitrates. Groundwater samples from monitoring wells A-33-070, A-35-080, A-49-095, A-49-135, and A-68-095 all exceed the nitrate MCL and contain elevated concentrations of total phosphorous.

Storm-water runoff, from surfaces on the west side of the Dry Products Building and from other areas, flows to a low elevation area located approximately between the A-33 and A-49 locations. This provides a transport mechanism for surficial contaminants to flow from the periphery of the Dry Products Storage Building to the area located between the A-33 and A-49 locations. The infiltration of contaminants carried by the storm-water into the subsurface is likely contributing to the geochemical signature of the groundwater at this location.

Revise section 10 of the report to include the last paragraph stated above.

Comment 10

Section 12.1.4 of the report includes the following statement:

> Exposure routes for offsite human health receptors are incomplete as residents do not come into direct contact with affected soil and are too far from affected soil for inhalation of fugitive dust to be a complete pathway.

The report does not provide evidence to support this statement. Fugitive dust levels have not been quantified at residential locations downwind of the Nu-West facility through any work carried out pursuant to the Administrative Order. Delete the comment above from section 12.1.4 of the Report.

Comment 11

Section 12.2.1 of the report includes the following statement:

> None of the upgradient monitoring wells are screened in the basalt aquifer because it pinches out on the east side of the Main Processing Area and samples from the easternmost basalt aquifer monitoring well (A-15-105) indicate that groundwater has been affected by Facility operations. While not upgradient, sampling results for several monitoring wells located on the west side of F-GYP-2 (A-53-165 and A-53-235), F-GYP-1 (A-52-285), Tailings Pond 2 (A-25-085), and cell TP-3 of F-GYP-0 (A-23-095 and A-51-185) indicate Ca-Mg-HCO3 type water that has not been affected by Facility operations. Sampling results for these basalt aquifer wells, which are all constructed with screened intervals of 20 feet or less, are consistent with the sampling results from the MW05-series basalt aquifer monitoring wells installed around F-GYP-1 and F-GYP-2 and constructed with 100-foot screened intervals. Collectively, sampling results from these monitoring wells are representative of background groundwater quality for the basalt aquifer at the CPO Facility.

Groundwater sampling from monitoring well A-51-185 in November 2014 was reported to have field and laboratory pH values of 8.73 and 8.25 respectively. Groundwater sampling of this same monitoring well in March 2015 was reported to have field and laboratory pH values of 5.0 and 5.66 respectively. These values are outside the range of pH values for the other monitoring wells described above. The report does not identify any explanation as to the source of these pH excursions. Such a variability in pH values suggests artificial influences (e.g., grout impacts, gypsum stack impacts to groundwater, etc.) rather than background groundwater quality.

Additional evaluation of monitoring well A-51-185 is necessary in order to determine the cause of the pH impacts to groundwater quality at this location, and to determine if work plan requirements have been satisfied in proper well installation.

Remove the reference to monitoring well A-51-185 from the above paragraph.

Comment 12

Section 12.2.1 of the report includes the following statement:

> As an example of further evolved basalt aquifer geochemistry, sampling results for the Arr-Maz production well, screened from 130 to 170 feet bgs within the basalt aquifer, indicate Ca-Mg-HCO3 type water that has not been affected by Facility operations with even higher concentrations of some major ions (e.g. calcium, magnesium, total alkalinity, and TDS).

Stiff diagrams of up-gradient monitoring wells A-70-135, A-71-220, A-72-135, and A-73-190 bear a strong resemblance to that of the Arr-Maz production well. Fourth quarter sampling data indicated that the Arr-Maz production well reportedly contained 0.32 mg/l phosphorous, 2.6 mg/l nitrate, and 1.1 mg/l fluoride. These are all contaminants of concern associated with the plant operations. Up-gradient monitoring well A-73-190 reportedly contained 0.56 mg/l phosphorous, 11.3 mg/l nitrate, and 8.5 mg/l fluoride. The Arr-Maz production well is expected to dilute water quality prior to groundwater sampling. So it is likely that the surrounding formation groundwater quality contains contaminants of concern in greater concentrations than that quantified from sampling of the production well.

Remove the above statement from section 12.2.1 of the report.

Comment 13

Section 12.2.1 of the report includes the following statement:

> As discussed in Section 8.6.5, the evolution of Ca-Mg-HCO3 type water results in higher concentrations of calcium, magnesium, bicarbonate, and TDS, with increasing residence time in the aquifer. As a result, TDS concentrations above the Idaho 153 Secondary Constituent Standard of 500 mg/l are an appropriate indicator of basalt aquifer groundwater that has been affected by CPO Facility operations only if the TDS concentration is accompanied by a major ion geochemical shift away from Ca-Mg-HCO3 type water along the Na-SO4 or Mg-SO4 trends.

The proviso that TDS in excess of 500 mg/l must be accompanied by a major ion geochemical shift away from Ca-Mg-HCO3 type water along the Na-SO4 or Mg-SO4 trends in order to be considered an appropriate indicator of basalt aquifer contamination is not supported.

Remove the above statement from section 12.2.1 of the report.

Comment 14

Section 12.2.2.1 of the report includes the following statement:

> The horizontal extent of source area COPC concentrations in the groundwater zone at the bedrock interface has been determined to the northwest (A-45-027), north (A-47-034), east (A-46-028), and south (A-61-020).

The A-45-027 and A-47-034 monitoring wells are the furthest bedrock interface monitoring wells to the northwest and north of the Main Plant Area. Both exceed the MCL for arsenic, and A-45-027 exceeds the MCLs for cadmium, fluoride and nitrate. A-61-020 exceeds the MCLs for arsenic, cadmium, chromium, fluoride and nitrate. A-46-028 exceeds the MCLs for arsenic and cadmium.

The horizontal extent of the groundwater zone at the bedrock interface and extent of COPCs cannot be determined from these monitoring points, because they are both at the periphery of the shallow monitoring network and exceed several MCLs.

Replace the above sentence in section 12.2.2.1 with the following:

> Source area COPC have been identified in the groundwater zone at the bedrock interface to the northwest (A-45-027), north (A-47-034), east (A-46-028), and south (A-61-020).

Comment 15

Section 12.2.5 of the report includes the following statement:

> Among the domestic well samples collected, those with the most pronounced shift toward sulfate and chloride in a Piper diagram are the samples that had the highest nitrate concentrations. The shift toward Na-Cl appears consistent with water softener backwash brine and indicates that septic system effluent is the likely source of the nitrate.

Sampling results from the domestic wells also show impacts from fluoride and phosphate, which suggests that groundwater quality is impacted by up-gradient sources. The geochemical impacts to the domestic wells from any water softener use would depend up upon, among other things, the location of the septic systems vis-à-vis the domestic well screen interval (depth and whether or not the septic system is up-gradient of the well) and whether or not a "water softener backwash brine" was actually discharging into the septic system(s).

Remove the above statement from section 12.2.5 of the report.

Comment 16

At the time of report submittal, only one quarter of sampling data was available from eight monitoring wells completed in 2014. These are listed as follows:

A-66-70

A-67-100
A-68-95
A-69-80
A-71-147
A-75-110
A-76-220
A-77-230

It is premature to base conclusions on long-term groundwater quality at these locations without several additional quarters of monitoring data.

Comment 17

Figure 2-11 Interpreted Structure Contour Map of Basalt – Sedimentary Contact

The following comments identify technical errors and alternative interpretations. There appear to be numerous errors and inconsistencies with this map including:

- The 5900 and 5950 contours are mislabeled as 5990 and 5995 at the top of the map;
- The determination that the basalt/Salt Lake contact was encountered in MW-A is a new and unsupported interpretation. Previous maps and cross sections had this well terminating in the sedimentary interbed above the contact.
- It is likely that JRS-8 was not drilled deep enough to reach a lower basalt member (if present).
- There is another basalt layer in NW-1 below the depth tagged as the basalt/Salt Lake contact.
- A-47 is depicted as being east of the fault yet the elevation of the contact is more consistent with the well located west of the fault. The A-47 contact at 6009 feet of elevation is slightly shallower than the average of about 6000 foot for the down dropped block but significantly deeper than the approximate 6050 elevation of the contact east of the fault.

Revise Figure 2-11 and/or provide additional information to support the data presented in order to address these comments.

Comment 18

The Site Assessment Report provides the direction of groundwater flow (Figures 2-14, 2-15, and 2-16, and narrative elsewhere), but the conceptual site model does not adequately address the quantity and flow rate of the ground water passing under the site. The large volumes of water (Section 2.7.1), and the presence of upward hydraulic gradients appear to play a significant role in the mitigating plant and impoundment impacts to ground water.

Provide estimated flow rates and volumes for each of the various "aquifers." Sources of data that could potentially be used to generate these estimates include, but are not limited to, the following:

- Data generated through the aquifer pump tests
- Estimated groundwater yield data generated during monitoring well construction
- Production well usage data

- Contaminant travel time from former PPA plant to production wells NW-1 and NW-9 (reports to Idaho DEQ on or about June 2004)

Comment 19

Section 13 includes the following statement:

> An evaluation of the investigation results for soil, groundwater, sediment and surface water and the updated CSM presented in this report shows that the CPO Facility has been sufficiently assessed pursuant to the requirements of the RCRA 3013 AOC.

EPA does not agree with this statement. The evaluation of the investigation results cannot be done until all the required investigations have been completed, including the investigation work identified in the comments above.

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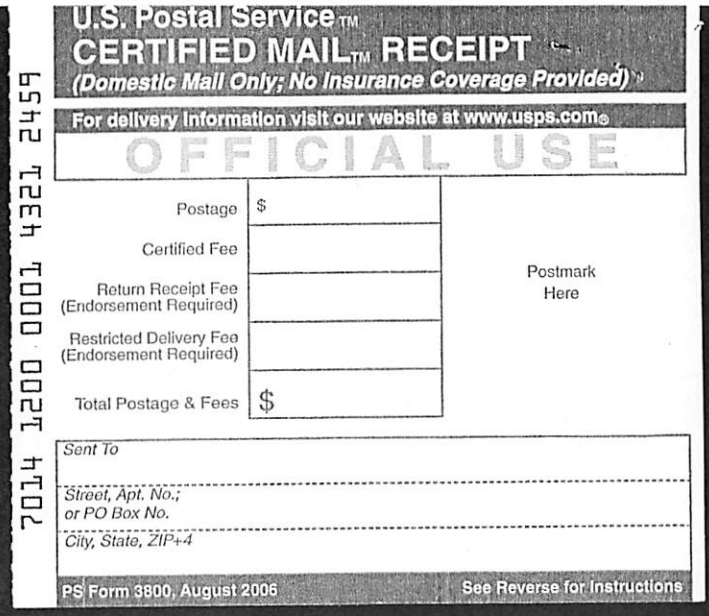

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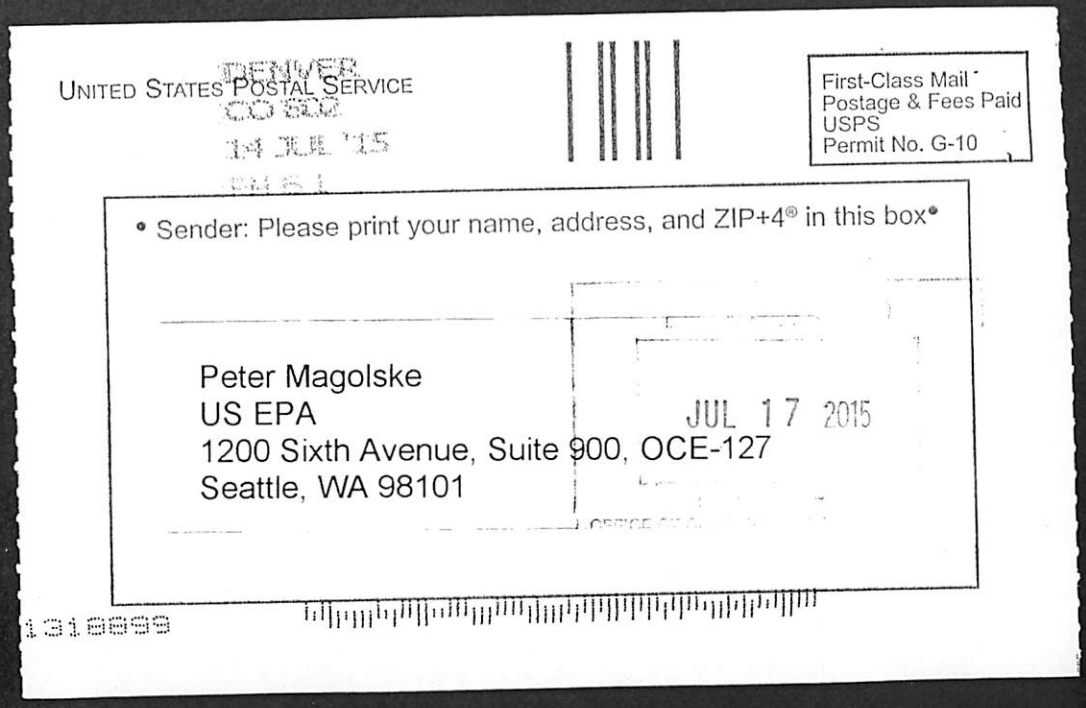

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